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| APPLICATION NO.                                                                                               | FILING DATE | FIRST NAMED INVENTOR     | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------------------------------------------------------------------------------------------|-------------|--------------------------|---------------------|------------------|
| 09/615,449                                                                                                    | 07/13/2000  | Hideomi Suzawa           | SEL 194             | 4023             |
| 7590 09/09/2004                                                                                               |             |                          |                     |                  |
| Cook Alex McFarron Manzo<br>Cummings & Mehler Ltd<br>Suite 2850<br>200 West Adams Street<br>Chicago, IL 60606 |             | EXAMINER<br>TRINH, HOA B |                     |                  |
|                                                                                                               |             | ART UNIT<br>2814         |                     | PAPER NUMBER     |

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                               |  |
|------------------------------|-------------------------------|-------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>09/615,449 | Applicant(s)<br>SUZAWA ET AL. |  |
|                              | Examiner<br>Vikki H Trinh     | Art Unit<br>2814              |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 43-54 and 79-114 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 43-54 and 79-114 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
     If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
     a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |                                                                                                                 |                                                                             |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>0904</u> . | 6) <input type="checkbox"/> Other:                                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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5. Claims 43-54 and 79-112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balasubramanyam et al. (5,923,999) in view of Hwang (5,852,481).

As to claims 43, 49, 85, Balasubramanyam et al. (5,923,999) discloses a semiconductor device having a semiconductor layer gate oxide layer 18 over a substrate 11; and a gate electrode 22, 24 adjacent to the gate oxide 18 with a gate insulating layer 20 interposed therebetween, wherein the gate electrode has a first conductive layer 22 comprising a tungsten nitride (col. 6, lines 13-15) and a second conductive layer 24 comprising a tungsten (col. 6, lines 13-15, col. 8, lines 39) on the first conductive layer; wherein the bottom surface of the first conductive layer 22 is in contact with the gate insulating layer 20 (See figure 8). See figures 8 and 13-14.

However, Balasubramanyam et al. (5,923,999) does not teach that the bottom surface of the first conductive layer is larger than a bottom surface of the second conductive layer.

Hwang et al. '481 teaches a gate electrode 200 (fig. 2A) having a first conductive layer 111, and a second conductive layer 112, wherein the bottom surface of the first conductive layer is larger than the bottom of the second conductive layer 112 (fig. 2A).

Balasubramanyam et al. (5,923,999) and Hwang '481 are in the same field of endeavors.

Therefore, as to claims 43, 49, 79, 85 and 103, it would have been obvious to one skilled in the art at the time the invention was made to modify the bottom surfaces of the conductive layers of Balasubramanyam et al. (5,923,999) such that the bottom surface of the first conductive layer being larger than the bottom surface of the second conductive layer, as taught by Hwang, so as to provide an enhanced display device with low power consumption (Hwang, col. 1, line 19).

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As to claims 44, 50, 80, 86, 92, 98, 104 and 110, Balasubramanyam et al. (5,923,999) teaches that the electrode is located over the semiconductor layer. See figure 13.

As to claims 45, 51, 81, 87, 93, 99, 105 and 111, Balasubramanyam et al. (5,923,999) teaches that because electrical resistivity of tungsten material is the same, Balasubramanyam et al. (5,923,999) meets the claim's limitation. See figure 14.

As to claims 46-48, 82-84, 88-90, 94-96, 100-102, 106-108, and 112-114, Hwang teaches that the device is a matrix liquid crystal display device, an EL display, a personal computer, a mobile computer, a portable information terminal, and a projector (Hwang, col. 1, lines 20-25).

As to claims 91, 97 and 109, Balasubramanyam et al. (5,923,999) in view of Hwang, as applied to claim 43, teach the invention substantially as claimed. However, the combined teaching of Balasubramanyam et al. (5,923,999) and Hwang does not explicitly show that the second conductive layer has a thickness from 200-400nm. Nonetheless, it would have been obvious to one skilled in the art at the time the invention was made to selectively choose a range of thickness for the second conductive layer, since it is a prima facie of obvious to an artisan for optimization and experimentation with a specific range of thickness for the second conductive layer because applicant has not yet established any criticality for the specific range.

Note that the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising therefrom. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. (In re Woodruff, 919 F.2d 1575, 1578 (Fed. Cir. 1990).)

### ***Response to Amendment***

Applicant's arguments with respect to claims 43-54, 79-114 have been considered but are moot in view of the new ground(s) of rejection.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Vikki Trinh whose telephone number is (571) 272-1719. The Examiner can normally be reached from Monday-Friday, 9:00 AM - 5:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. Wael Fahmy, can be reached at (571) 272-1705. The office fax number is 703-872-9306.

Any request for information regarding to the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Also, status information for published applications may be obtained from either Private PAIR or Public Pair. In addition, status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspro.gov>. If you have questions pertaining to the Private PAIR system, please contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

Lastly, paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site ([www.uspto.gov](http://www.uspto.gov)), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests

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to restart a period for response due to a missing U.S. patent or patent application publications  
will not be granted.

Vikki Trinh,  
Patent Examiner  
AU 2814



LONG PHAM  
PRIMARY EXAMINER